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CAN SCIENCE WIN THE PEACE?

Science has created weapons of war that can destroy civilization; now can science solve the problems of war so that these weapons may be converted into power for peace?

What do the scientists themselves think about these problems?

To help find the answer the International Council of Scientific Unions addressed two questions to a representative number of eminent scientists.

These two questions were:

(1) In which measure do the methods of international scientific work contribute to the creation of an international spirit and to the maintenance of peace?

(2) In which ways could scientific organizations and scientists intensify their activities for the maintenance of peace?

The digest of answers to these questions was written up by Professor Bart J. Bok, of Harvard, in the February 11th issue of SCIENCE.

Three Major Conclusions

While the detailed replies to both questions are instructive, it appears to this writer that three major and practical conclusions were brought out clearly:

(A) The fundamental nature of the population-resources problem as a cause of war;

(B) The need for the popularization of the findings of science;

(C) The necessity of applying the scientific method to the greatest problems of life.

Of course, there were many other conclusions reached such as the basic international character of science and the need for international conferences, cooperation, and publications.

"Natural Resources and Overpopulation"

Under this heading Professor Bok writes:

"Several correspondents express extreme concern over the problems of overpopulation and lack of natural resources as they bear upon the maintenance of world peace."

While other causes of war are recognized in this survey, they are given relatively little emphasis compared to the above.

As examples of the concern shown by scientists about the problems of overpopulation and lack of natural resources, Professor Bok gives the following:

"Most modern wars have been brought about as the result of economic pressures, based on the Malthusian principle," said Professor Ralph E. Cleland, of Indiana University.

Professor Solomon Lefschetz of Princeton expressed the opinion that the explosive growth of population everywhere is the principle long-range cause for war. He thought a clash between the United States and the Soviet Union (mainly due to lack of understanding between the two sides) is the most important cause for war in the immediate future.

Professor Marshall Harvey Stone of the University of Chicago replied:

"It is only through the applications of science on an international basis in agriculture, industry, public health and population control that a balance between our limited world resources and our consumption can be achieved at a relatively high standard of living and one of the most dangerous causes of aggression and war eliminated."

Professor J. A. Carlson of the University of Chicago had this to say about the problem:

"The known factors that lead to war are overpopulation, undernutrition, uncontrolled greed, and antediluvian religions and philosophies. We know now on the basis of science that the present human race is one species and that there are saner and better ways of meeting human food needs and controlling excess human reproduction than the methods of war."

Returning to Professor Cleland, he states some of the possible solutions to the problem of war: "Only science can remove the basis of these pressures. Scientific control of population, the production of more efficient crop plants and domestic animals, the proper exploitation of vast areas of potentially usable land, control of soil erosion, development of irrigation and other projects designed to increase arable land, the discovery of new sources of energy--these are activities which will remove the cause of war."

UNESCO's activities in connection with the forthcoming United Nations Scientific Conference on the Conservation and Utilization of Resources, writes Professor Bok, are wholly in line with the above suggestions.

Other Activities For Peace

While peace is dependent upon the control of population and the conservation and development of world resources, the questioned scientists called attention to other activities that would advance the cause of peace.

They attached great importance to continued support of the work of international scientific unions, and they urged holding frequent international conferences. Exchange of fellowships and scientific missions between nations were also emphasized.

A number of the scientists pointed to the importance of cooperative research projects among scientists and institutions from two or more nations.

Popularization and Education

Under the heading Popularization and Social Implications of Science it was encouraging to note that the scientists called attention to the need for a greater popularization of the findings of science.

"More factual scientific education and understanding of the populations in all lands would greatly diminish the drives or needs for war," said Professor Carlson. "In my judgment and experience, this phase of education on an international scale is primarily a social responsibility of the scientists."

Professor R. W. Gerard of the University of Chicago expressed the feeling that a big opportunity is being lost since we are not stressing to a greater extent the popularization of the use of the scientific method.

Professor M. B. Visscher of the University of Minnesota expressed the opinion that the scientific method can and must be applied to the greatest problems of human life. All prior attempts to create conditions conducive to peace have failed, he says, and man must be allowed

to use the constructive power of the scientific method in this sphere. The survival of the human race as a whole is in jeopardy today.

Wider Use of Scientific Method

Today the scientific method is applied almost wholly to basic research. Largely as a result, the practical politician and the general public, who are called upon to solve the problems of war in a democracy, can't understand the findings of the scientists.

In some cases scientists working in one field can't understand the terminology of scientists working in other fields.

It is evident that scientific knowledge can be of little practical value if it is understood only by a relatively small number of experts.

Cannot the scientific method be applied to the findings of scientists in a manner that can produce practical programs of life? For example, a coordinated population-resources program?

Cannot the findings of scientists be coordinated in a scientific manner to produce a body of knowledge that has some chance of solving the problems of war?

Today many of the works of science gather dust on library shelves, while, as Professor Visscher has said, the survival of the human race as a whole is in jeopardy.

Today enormous amounts of money are expended upon scientific research the results of which seldom reach the practical politician or the general public. These scientific findings have proved of little or no value to humanity largely because no one has taken the time or trouble to coordinate them into programs and popularize the programs.

The question might be asked: Can the scientific method successfully be applied to the coordination of practical programs and to the popularization of the results?

Limitations of Science

Probably most people would agree that if scientific knowledge is to be of practical value in solving the problems of war it must be known and used, coordinated and popularized. But it must be recognized that certain basic causes of war may involve large groups of human beings and that science cannot experiment with and control human beings as it can plants and animals.

Another possibility that should be seriously considered is the danger that science may fall into the control of a centralized government or totalitarian ideology, as it appears to have done in Nazi Germany and Soviet Russia.

Professor Richard B. Goldschmidt, of the University of California, warns against this possibility in his article "Research and Politics" in the March 4, 1949 issue of SCIENCE.

"Only small steps lead from organized teamwork to professional planners and finally to political control," says Professor Goldschmidt. "I cannot help saying that I have followed with serious misgivings the increasing trend toward planned and organized science, though realizing its need in certain fields."

How can these objections to organized scientific effort be answered? First is it necessary for science to use experimental control with human beings as it does with plants and animals in order to apply the scientific method to the problem of war?

Second, how can we guard against organized scientific effort falling into the control of centralized government?

Possibilities of Science

Professor Visscher has been quoted as saying that the scientific method can and must be applied to the greatest problems of human life.

But how can the scientific method be applied to the problems of war without using the method of controlled experimentation?

Under the heading Scientific Method and Social Problems Professor Edgar G. Miller, Department of Biochemistry, Columbia University, considers this question. He says in the March 19, 1949 issue of SCIENCE that the method of controlled experimentation is not necessary.

"Astronomy has done very well without subjecting the behavior of stars and planets to experimental controls," says Professor Miller. "Geology has not used this method to any notable extent. Most of Darwin's contributions to biology did not come from such an experimental basis, either in its conception or verification. A problem need not be inaccessible to science if controlled experiments are impossible."

No doubt it would be more convenient in solving problems of war to apply the method of controlled experimentation, but according to the balance of evidence available this does not seem to be necessary.

Perhaps the best defense against the danger that centralized government and various ideologies might get control of science and scientists, would be for a considerable number of universities and privately financed scientific organizations to tackle the problems of war.

Three Steps Necessary

Scientists everywhere are beginning to realize that research alone is not enough. Unless the facts discovered by research are coordinated and popularized they are of little practical value.

If this is true, it follows that scientific organizations should tackle the problems of war all along the line from basic research, through coordination, to popularization.

The gap between the research scientist and the practical politician must be closed, and it seems that organizations of this nature would be the most effective means of closing it. Also this would be one of the most effective ways of closing the gap between the natural sciences and the social sciences.

As we understand the undertaking, three steps are necessary besides basic research: (1) to gather the findings in many fields of science, (2) to classify, compare, and balance these findings into practical programs for possible action, and (3) to write the results in a style that the practical politician and general public can understand.

If a centralized government alone conducted such activities there might be danger of science becoming enslaved and of education degenerating into propaganda. As has been mentioned, the best way to guard against such danger in the future would be for universities and privately financed scientific groups to begin this work now.

Pioneers Wanted

Perhaps no one has suggested the formation of one or more scientific organizations whose chief aim would be to find solutions to the problems of war. But such organizations have been implied by many scientists and writers.

Aldous Huxley in his recent article for UNESCO in the Science News Letter, March 26, 1949, suggests

that scientists should collaborate on a series of Manhattan Projects, not for destruction, but for creation. He was speaking about the population-resources problem as a permanent menace to peace and liberty.

In his address before a Herald-Tribune forum, March 7, 1949, Dr. Harrison S. Brown, Institute of Nuclear Study, University of Chicago, emphasized the importance of the scientific attitude as a means of rebuilding the world.

"The scientific attitude," says Dr. Brown, "is at once a way of thought, a way of conduct and a way of life. It is an attitude that has been found essential for constructive scientific progress--an attitude which, if it were to be more widely disseminated, accepted, appreciated, and used, would go a long way toward helping mankind solve the many dilemmas that now confront it."

Dr. Brown called attention to the problem of overpopulation as one of these dilemmas. "Increased populations and wars have, in turn placed tremendous drains upon our natural resources, upon our power reserves, upon our arable land."

Over-Specialization

Today the ambitious young scientist often tries to become the world's greatest authority on some small part of life. It does not seem to matter how limited the field.

This type of specialization is necessary for the advancement of science, but it is only a part of the job to which the scientific method and the scientific attitude can be applied. It must be followed up by other scientists with broader vision who can coordinate individual findings into practical programs.

Some scientists seem to think that they are above the practical problems of coordination and popularization. "Indeed," says Professor Gerard, "science has, with the exception of a few devoted scientists, preferred an esoteric status and has insulated itself from society. This must be radically altered."

Closer association and teamwork among scientists, practical politicians, and business men as regards the problems of war would be mutually advantageous.

Population: A Basic Problem

If scientists in one field can cooperate with scientists in other fields, and with other professions, in helping to apply the scientific method and attitude to practical programs and popular education--what problems should they attack?

Professor Pok's survey of qualified scientific thought suggests that the problems of overpopulation and lack of natural resources are basic causes of war that demand immediate attention.

Fortunately, it looks as though the population-resources problem will finally get the attention it deserves. The United Nations Educational, Scientific and Cultural Organization has selected "Food and People" as its major discussion topic for this year, and has invited schools, clubs, and other organizations to give attention to this world problem.

During 1949 UNESCO will publish a number of discussion pamphlets on the theme of the year, food and people. "But," says the UNESCO COURIER, December-January, 1949, "the campaign will not stop at the pamphlets or at the discussion which will be organized on the basis of this material. We shall popularize the topic on the radio and in the press, we shall draw the attention of people to films that deal with it,

we shall put it on wall charts, and we shall do everything to bring it into the homes of people."

Further evidence that scientists are becoming increasingly interested in the population problem is the rising popularity of Malthus. "In the course of their recent meetings," says a New York Times editorial, September 19, 1948, "both the British and American Associations for the Advancement of Science restored Malthus to his pedestal. * * * Neither British nor American experts saw any possibility of producing enough food."

This means that without a program of population limitation all the optimistic efforts of scientists to conserve and increase resources will not solve the problem of food and people. Indeed, Julian Huxley, the eminent British scientist, on the occasion of his retiring as Director-General of UNESCO, was quoted by the Associated Press as saying that the world population increase is a greater threat to our civilization than war itself.

MALTHUS vs. MARX

When Malthus wrote the first edition of his famous Essay on the Principle of Population in 1798, the Utopians and "perfectionists" of the French Revolution were striving to gain control of Western Civilization, much the same as the Marxists of the Russian Revolution are trying to do today.

The basic theory of the revolutionists when Malthus wrote, as it is now, was that practically all the evils of the world are caused by the wrong kind of an economic system. Change the system from capitalism and private enterprise to socialism or communism, and mankind will live happily ever afterwards.

Malthus did not take the position that the poverty and misery of the workers were due solely to the tendency of population to increase beyond the means of subsistence. But he did point out in unmistakable terms that it would be of little help to change the economic system (or the institutions of the time) unless man adjusted his population increase to his means of subsistence.

Malthus' position has been substantiated by the results of both the French and Russian revolutions. Both revolutions changed the institutions of the time, but the economic and political conditions of the workers were not improved as promised.

On the other hand, Ireland has cut its population in half during the last hundred years (partly by means suggested by Malthus) and has improved its level of living from one of the lowest to one of the highest in Europe.

For the revolutionists to make headway they must first discredit the Malthusian principle of population and then create the overpopulated conditions upon which communism and class warfare thrive.

"In its general nature," says Professor Warren S. Thompson in his standard textbook Population Problems, "Marx's theory of population resembles Godwin's, a theory which originally called forth Malthus' essay in reply. * * * Henry George, like Marx, was interested in population theory only because he had a particular theory of social reform to set forth and needed to refute Malthus' theory of population growth to make his single tax theory appear plausible."

One reason for concern about the problem of overpopulation, says the New York Herald Tribune in its editorial "Poverty and Population," February 12, 1949, is that men who live on the verge of starvation more readily accept communistic promises than men who are better fed. "Revolutionary ideas," continues the editorial, "normally have less appeal to the man who is prosperous enough so that he has something to lose, than they do to the man who is hungry."

These facts are now clearly recognized by the United States and they form the basis for America's foreign-aid program to stop Russia's expansionist policy of communism.

For this reason it is encouraging to learn that both the British and American Associations for the Advancement of Science have restored Malthus to his rightful position. Likewise it is encouraging to know that the United Nations Educational, Scientific and Cultural Organization has selected "Food and People" as its chief discussion topic for 1949 and is making a great effort to bring the discussion to the attention of the public.

As there was no better way to expose the promises of Godwin and the revolutionists in the 19th century than to use the evidence produced by Malthus, so today in the 20th century there is perhaps no better way of exposing the empty promises of the Marxist revolutionists than to recall the work of Malthus and to discuss the problem of food and people, as he was the first to do on a large scale.

To understand the principle of population established by Benjamin Franklin, Malthus, and Darwin, and now reaffirmed by most non-Marxian scientists, is to understand the impossible and dangerous promises of the communists.

Bearing this in mind, it is easy to understand why, according to Professor Thompson, "Marx had nothing but contempt for Malthus... ." It also helps to explain why every follower of Marx tries to belittle the principle of population at every opportunity, especially in the class room.

The communist party line on the subject of population is that there is no such thing as overpopulation. Unfortunately, many capitalists have been taken in by a theory that would ultimately mean their own destruction.

The communist party line contends that natural resources are relatively unimportant compared to what the Marxists call "resourcefulness." There is just enough truth in this argument to appeal to the population booster who imagines that American "know how," "science," or the Chamber of Commerce will provide.

We do not have to review the evidence presented by Malthus or the eminent scientists quoted in the early part of this bulletin. We know that the Germans and the Japanese were two of the most resourceful peoples in the world, yet they were the very peoples who started World Wars I and II.

Today two powerful nations and two opposing ideologies are locked in a struggle for supremacy--or survival. In this struggle are opposed two philosophies of life. One is represented by Malthus and the other by Marx. A study and comparison of the works of these two men might be of value in helping to clear the air between American capitalism and Russian communism.

--Guy Irving Burch, Editor

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